



The Safety of Induction of Labour in the Niger Delta Region

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ABSTRACT

The overall goal of obstetric practice is to deliver a healthy baby to a healthy mother. Attaining this goal sometimes may require the ultimate weapon at the disposal of the obstetrician, which is intervention. Intervention becomes necessary when on critical assessment of the obstetric balance, the risk of continuing the pregnancy far outweighs the risk of interrupting it. The intervention at the disposal of the obstetrician is either of induction of labour or Caesarean section.

This study aims to determine the incidence, indications and the maternal and neonatal outcome of induction of labour at the Niger Delta University teaching Hospital, Okolobiri, Bayelsa State, Nigeria. This is a cross-sectional, prospective study conducted between 1st January 2010 to 31st December 2011. The incidence of induction of labour in this study was 6.5% and the three commonest indications were; prolonged pregnancy 31 (51.7%), followed by prelabour rupture of foetal membranes 19 (31.7%) and hypertensive disorders of pregnancy 10 (10.0%). Most of the patients had induction of labour with vaginal misoprostol 33 (55.0%). Majority of the women had spontaneous vaginal delivery 51 (85.0%), while 9 (15.0%) had emergency Caesarean section. The commonest indication for the Caesarean section is cephalopelvic disproportion 5 (8.3%). The most common complication seen in the mothers is hyper stimulation 4 (6.7%), while 7 (11.7%) of the babies were admitted into the special care baby unit (SCBU).

INTRODUCTION

Induction of labour is a common intervention during pregnancy in both the developed and developing countries (Kwawukume and Emuveyan(eds) (2002; Hofmeyr et al.,2001). It is indicated in medical, obstetric and fetal conditions in which prolongation of the pregnancy would jeopardize fetal or maternal well being and in which there are no contraindications to vaginal delivery and the use of amniotomy, oxytocin and prostaglandin. Induction of labour is defined as the artificial termination of pregnancy after the age of viability and before the spontaneous onset of labour for the purpose of accomplishing vaginal delivery (Kwawukume and Emuveyan(eds) (2002; Calder,1995). The whole process of induction of labour should be to mimic the physiological process as closely as possible; however, this is a difficult goal to attain since the mechanisms controlling the onset of labour are not completely understood (Orhue,1997).

The incidence of induction of labour is variable and reflects the confidence of the obstetrician in monitoring pregnancy and its complications as well as assessing the gestational age. It ranges between 3-20% depending on the centre (Calder, 1995). It is lower in developing countries due to a dearth of intra-uterine monitoring devices, it is however observed that induction of labour is commonly performed in institutions where there are obstetricians or persons who has had further obstetric training and thus is an exclusive practice of the specialty in most countries (Calder, 1995).

Induction of labour can be achieved by surgical or medical methods or by a combination of both. A popular method of labour induction in term of pregnancies is fore water amniotomy and synchronous oxytocin infusion. This has been employed for more than fifty years. Although prostaglandins are widely used for this purpose along with oxytocin in developed countries, oxytocin alone remains the major drug for medical induction in the developing nations (Zeeman et al., 1997). The choice of methods and order of sequence may depend on the inducibility of the cervix, as an unripe cervix is associated with failed induction with attendant fetomaternal morbidity, higher risk of surgical intervention, undue stress on the medical staff. The indications for induction of labour must be specific and unambiguous. The indications must be to save the life of the fetus and spare the mother of the morbidity and rarely the mortality of caesarean section. Certain obstetric complications carry clear cut fetal risk and induction of labour may be indicated. These include rhesus isoimmunization, diabetes mellitus, intrauterine growth restriction and pre-eclampsia (Calder, 1995; Calder, 1997). Prolonged pregnancy is the commonest

indication for induction of labour in this environment (Orhue, 1997). There are few absolute contraindications to induction of labour. Some of these include situations in which vaginal delivery is hazardous or the fear that the process of labour may endanger the life of the fetus (ACOG, 1996; Orhue, 1997).

The potential risks associated with induction of labour includes prematurity, cord prolapsed, Aprotio placenta, and uterine hyper stimulation 3. Others are intrapartum hemorrhage, prolonged labour, precipitate labour, failed induction, primary post partum haemorrhage and genital tract lacerations (Orhue, 1993; Orhue, 1997). The commonest medical agent used in our centre is oxytocin in infusion which is usually preceded by cervical ripening if the Bishop's score is unfavorable. Vaginal Misoprostol [PGE1] as an agent for induction labour is also used.

In our environment, there is still a lot of aversion for caesarean section and there are limited facilities for sophisticated fetal monitoring in labour. It is, therefore, very necessary to determine the effectiveness and safety of our induction process, that is compatible with safety of both the fetus and the mother. It is hoped the outcome of this study may engender a change in our policy on induction of labour, and suggest ways of improving on our present level of care.

METHODOLOGY

This was a cross-sectional, prospective study conducted between 1st January 2010 to 31st December 2011. A questionnaire was designed to obtain information on the socio-demographics characteristics of the patients, the indications for induction, Bishop's score, methods of induction, the induction-delivery interval, route of delivery and indications for Caesarean section, neonatal and maternal outcomes. The information obtained were coded and transferred onto a profoma already design for the study. Statistical analysis was performed with Statistical Package for Social Sciences software SPSS version 11 where nominal data were compared using the chi square test (χ^2) and the difference between means determined by the students t- test with the level of significance set at $\alpha = 0.05$. The sample size was calculated to be 60. Approval for this work was obtained from the Ethical Committee of the Niger Delta University.

RESULTS

During the period of study, there were 921 deliveries, with sample size of 60 giving the incidence of induction of labour in this study to be 6.5%.

TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS OF PATIENTS

Characteristic	Frequency (%)
Age (years)	
≤19	4(6.7)
20-25	26 (43.7)
26-30	17 (28.3)
31-35	8 (13.3)
>35	5 (8.3)
Parity	
0	22 (36.7)
1 – 3	34 (56.7)
≥4	4(6.6)
Educational status	
Nil	13 (21.7)
Primary education	14 (23.3)
Secondary education	26 (43.3)
Tertiary	7 (11.7)
Marital Status	
Married	32(53.4)
Cohabiting	17(28.3)
Single	11(18.3)
Occupation	
Unemployed	8 (13.3)
Petty trader	19 (31.7)
Civil servant	14 (23.3)
Farmer	5 (8.3)
House wife	14(23.3)

Table 1 shows the socio-demographic characteristics of women. Their ages were from 18 to 41 years. Twenty-two patients (36.7%) were primigravidae. Most had

secondary level of education 26 (43.3%) and were married 32(53.4%).

Table 2: Indications for Induction of labour

Indication	Frequency	Percentage
Prolong pregnancy	31	51.7
PROM	19	31.7
Preclampsia/PIH	6	10.0
IUFD	3	5.0
IUGR	1	1.6

Table 2 shows indication for induction of labour. The three commonest indications in this study were prolonged pregnancy 31 (51.7%), followed by prelabour

rupture of membranes at term 19 (31.7%) and hypertensive disorders of pregnancy 10(10.0 %).

Table 3: Events in Labour

Variable	Frequency	Percentage
Bishop's Score		
<6	18	30.0
6-10	29	48.3
>10	13	21.7
Induction Method		
Vaginal misoprostol	33	55.0
Titrated Oxytocin Plus	16	26.7
Amniotomy		
Titrated Oxytocin only	11	18.3
Induction Delivery interval in hours		
< 3	2	3.3
3-8	14	23.3
9-12	39	65.0
>12	5	8.3
Apgar Score at 5 minutes		91.7
7-10	55	5.0
4-6	3	3.3
<3	2	
Route of Delivery		
Vaginal delivery	51	85.0
Emergency Caesarean section	9	15.0
INDICATIONS FOR CS*		
CPD**	5	8.3
FOETAL Distress	4	6.7

**CPD=Cephalopelvic disproportion

* CS=Caesarean section

Table 3 shows the events in labour. The cervixes of majority of the patients were inducible 42(70.0%) with Bishop's score above six on admission. Most had induction of labour with vaginal misoprostol 33(55.0%), while majority were delivered within twelve hours of commencement of induction 53(88.3%). Majority of the babies had normal Apgar score at 5 minutes 55(91.7%), with only 2(3.3%) of the babies with severe birth asphyxia. Majority of the women had spontaneous

vaginal delivery 51 (85.0%), while 9(15.0%) had emergency Caesarean section. The commonest indication for the Caesarean section was cephalopelvic disproportion 5(8.3%). The most common complication seen in the mothers was hyper stimulation 4(6.7%), this is followed by primary post partum haemorrhage due to uterine atony 3(5.0%) and perineal tear 3 (5.0%). 7(11.7%) of the babies were admitted into the special care baby unit (SCBU). Table 4.

Table 4: Foeto-maternal Complications

Complications	Frequency	Percentage
Hyper stimulation	4	6.7
PPH	3	5.0
Perineal tear	3	5.0
Retained placenta	2	3.3
Admission to SCBU	7	11.7

DISCUSSION

The rate of induction of labour is variable and reflects the confidence of the obstetrician in monitoring pregnancy

and its complications as well as assessing the gestational age (Calder, 1995). The induction rate of 6.5 % in this study is low compared with rates of up to 20.0% in the United States of America (MacDorman et

al., 2002), but similar to values reported from other centers in Nigeria (Ekele et al., 2002). It is lower in developing countries due to a dearth of intra-uterine monitoring devices. It is however observed that induction of labour is commonly performed in institutions where there are obstetricians or persons who have had further obstetric training and thus is an exclusive practice of the specialty in most countries (Orhue, 1997).

The indications for induction of labour must be specific and unambiguous. The indications must be to save the life of the fetus and spare the mother of the morbidity and rarely the mortality of Caesarean section. The commonest indications for induction of labour in this study were prolonged pregnancy, premature rupture of membranes and hypertensive disorder of pregnancy. Prolonged pregnancy is the commonest indication for induction of labour in this environment (Orhue, 1997). Induction of labour in this circumstance is justified to reduce perinatal mortality which increases after 41 weeks of gestation due to deterioration in the function of an ageing placenta (Kwawukume, 2002). Furthermore, there is great aversion to Caesarean section in our environment and a policy of induction of labour at 41 weeks as been showed from meta-analysis of randomized controlled trials to reduce caesarean section rates without increase in adverse perinatal outcomes (Sanchez-Ramos et al., 2003). Another major indication was premature rupture of foetal membranes, which is similar to findings from other centers in Nigeria, however this in contrast to findings from Latin America where it was found to be commonest indication for induction (Guerra et al., 2009).

Vaginal misoprostol was the common method of induction used in this study; this because Misoprostol is much cheaper and is stable under the tropical climate, hence the drug is easily stored and transported and several trials have shown that misoprostol is efficacious for both cervical ripening and induction of labour. It is readily accessible, orally and vaginally active, and well tolerated with a low incidence of systemic side effects (Escudero and Contreras, 1997; Loto et al., 2004). It is however not recommended for cervical ripening or labour induction in patients who have had prior Caesarean delivery or major uterine surgery (Hofmeyr, 2001; Katz et al., 2000).

When the total cervical score exceeds 8, the likelihood of vaginal delivery subsequent to induction of labour is similar to that observed after spontaneous labour. Induction of labour with a poor cervical score (1-5) has been associated with failure of induction, prolonged labour and a high Caesarean birth rate. Majority of the patients had favourable cervical scores (Pajak et al., 2001; Stuart S and Christoph L (eds), 2000).

The induction-delivery interval was used to determine the outcome in this study which was 8.3 hours in average. The majority of the women (91.7%) in this study delivered within 12 hours. This could be considered an advantage to them and their families. It also reduced the congestion in labour ward and lying in-ward. This is

similar findings from previous studies in Nigeria (Orhue, 1993; Ekele et al., 2002).

9 patients (15.0%) had Caesarean Section for failed induction which is slightly higher than findings from previous studies (Orhue, 1993; Kouam, 1993). However this rate is much lower than the Caesarean section rate of 53.6% reported previously in our hospital (Ibrahim and Jeremiah, 2012). This further reinforces the findings of lower caesarean section rates associated with labour induction without increase in other adverse pregnancy outcomes (Nicholson et al., 2009).

Induction of labour is not without risks. Maternal complications in this study included: uterine hyperstimulation, post partum haemorrhage, retained placenta and perineal tear. All four patients with uterine hyperstimulation were induced with vaginal misoprostol, which is a known complication associated with its use (Hofmeyr, 2001). They were managed by changing their positions to left lateral, administering oxygen by face mask and irrigating immediately from the vagina with normal saline, remnant of the misoprostol dose. The mean fifth minute Apgar score of 8.9 from this study is comparable to findings from previous studies, and 11.7% rate of admission into the intensive care baby unit in this study is within 8.7% and 25.5% reported in the literature (Wing et al., 2002).

CONCLUSION

Induction of labour as an intervention to prevent adverse perinatal outcomes is low in our center; it is associated with low complication rate. Hence, it is a safe intervention even in low resource setting like ours that lacks sophisticated equipments for continuous fetal monitoring. Also the caesarean section rate is not increased; reducing caesarean section rates is a priority consideration in our environment where there is aversion to Caesarean section, high Caesarean section rate and lack of adequate resources and manpower for Caesarean section. Moreover, the use of misoprostol is relevant in our environment where lack of facilities for storage of oxytocin, its higher cost and adulterated forms are a daily reality. This being so, misoprostol must certainly be restricted to well organized obstetrical units; under the surveillance of experienced obstetricians and certainly also used within a well-defined protocol.

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